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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/931,347	08/16/2001	Bangalore Aswatha Nagaraj	13DV14035	2644

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EXAMINER

MCNEIL, JENNIFER C

ART UNIT	PAPER NUMBER
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1775

DATE MAILED: 08/28/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

AS4

Office Action Summary

Application No.

09/931,347

Applicant(s)

NAGARAJ ET AL.

Examiner

Jennifer McNeil

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 February 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 August 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2. 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 1 refers to an outer layer comprising no more than about 2 wt% Hf. Claims dependent upon claim 1 refer to a gradient of Hf at depths in the protective coating. It is understood that the outer layer is the upper portion of the protective coating and the diffusion layer is the lower portion. However, the specification teaches that the outer layer may be 20 to 40 microns in thickness. The claims teach that at depths of 10-50 microns, the Hf may be 1-9 wt% on average. It is not clear how the outer layer may possess less than 2 wt% on average, when it appears that it overlaps with the depth ranges in which there may be an average of 1-9 wt% Hf. Furthermore, claim 4 states, the Hf concentration has a relatively large second concentration, but is not to exceed 9 wt%, at depths below the protective coating outer surface. The outer surface is on the outer layer, therefore depths below this outer surface include the outer layer. Please clarify.

The claims refer to "the outer layer comprises platinum, aluminum, hafnium, substantially no added silicon, and elements diffused into the protective coating from the substrate". Does this mean that the outer layer has no added silicon, and also has no elements diffused from the substrate? Please clarify.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

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Claims 1, 2, 3, and 8 are rejected under 35 U.S.C. 102(a) as being anticipated by Darolia et al (US 6,190,471). Darolia teaches a superalloy article with a coating thereon. The coating includes a protective layer (34) of a diffusion aluminide, such as a platinum aluminide. The protective layer may also include an element such as hafnium. The hafnium is formed in the protective layer by diffusion from the substrate (col. 6, lines 17-67). The protective layer has about 1 wt% Hf after formation of the article (col. 7, lines 13-27). A ceramic layer may be deposited on the aluminide, and the article may be a turbine blade (col. 3, lines 25-30; col. 4, lines 13-17).

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Claims 1-15 are rejected under 35 U.S.C. 102(e) as being anticipated by Darolia et al (US 6,344,282). Darolia et al teach a diffusion aluminide coating having a graded structure. The substrate is a nickel base superalloy with a substrate surface, and the coating has an inner region of a diffusion aluminide including a reactive element such as Hf. A thermal barrier coating (40) may be applied over the aluminide coating. Specifically, Darolia gives an example of Hf added to the aluminide wherein the Hf is disposed in a gradient. At depths of 0-5 microns, the Hf is present at 0.11 wt%; at depths of 5-15 microns, the Hf is present at 0.51 wt%; and at depths of 15-30 microns the Hf is present at 6.9 wt% and Al is present at 20.7 wt %. Also, Darolia gives an example where the Pt is present at 27.5 wt% at 5-15 microns or 29 wt% at 15-30 microns (see examples 4 and 5). Essentially, with increasing distance inward from the outer surface towards the substrate, the reactive element concentration (hafnium) will increase to a peak level and then decrease until the element approaches zero near the surface of the substrate (col. 6, line 65- col. 7, line 4). Darolia also clearly teaches that a diffusion zone will be present when a nickel base superalloy is used (col. 4, lines 55-60).

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer McNeil whose telephone number is 703-305-0553. The examiner can normally be reached on Monday through Friday, 9:30AM-6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones can be reached on 703-308-3822. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



JCM
August 25, 2002

Jennifer McNeil
Examiner
Art Unit 1775


DEBORAH JONES

SUPERVISORY PATENT EXAMINER